

Determinants of utility of Short Messaging Services (SMS) by Farmers of Tamil Nadu for Agricultural Technology Transfer

Abstract

A study was conducted among 120 farmers as respondents in Virudhunagar district of Tamil Nadu with the objective of analysing the factors influencing the reception and utility of Short Messaging services. Ex-post facto research design was employed and the farmers were selected using proportionate random sampling procedure. The data collected using a well-structured interview schedule. The results revealed that among the factors, readability of messages, understandability of messages, size of the messages, font size of the messages and more information in one messages are found to have 'high influence' to 'moderate influence' on the respondents to receive and utilise SMS. There was little or no influence exerted by the factors 'continuity of message' and 'diversity of information'. Nearly three fifth of respondents were found to be 'highly influenced' by the availability of time to look into the messages Mood and interest at the time of reception of message was found to be 'highly influencing' and 'moderate influencing'. There was moderate (to high influence exerted by the factor 'previous experience of receiving messages' on the respondents while the factor 'successful experience of adopting the technologies given through the messages' had less influence on the respondents. The factor analysis resulted in three factors which got loaded based on message and season, mobile and technical aspects of message and influence of personality on the reception of messages.

(Key word: Short Messaging Services Utility, Factor influencing SMS reception)

The rationale of the study

The Information and Communication Technology (ICT) tools offered immense scope for agricultural technology delivery within short span of time and to the clients who are geographically disadvantaged. The Mobile phones in recent past has emerged into a powerful medium which transformed the information exchange related to agriculture and allied activities. Realising the potential of mobile phones for information dissemination, numerous empirical studies were attempted by researchers in India and across the globe.

Aker (2008) found that Mobile phone service has reduced grain price dispersion across markets by a minimum of 6.4 percent and reduced intra-annual price variation by 10 percent. Fafchamps and Minten (2011) studied the benefits that Indian farmers

derived from SMS based markets weather and crop advisory information through a controlled randomized experiment in 100 villages of Maharashtra. They did not find statistically significant effect of treatment on the price received by farmers, on crop losses resulting from rainstorms, or on the likelihood of changing crop varieties and cultivation practices. Lokanathan et. al., (2011) through their study suggested that accurate, real-time price information improves farmer livelihoods. Furthermore, the service facilitated behavioral changes that enabled farmers to improve their ability to coordinate supply and demand for agricultural produce based on price signals

Raj et. al. (2011) found through his study that net income of the intervention farmers was 15.2% higher than that of the control group. Spending of intervention farmers on seeds, nursery, nutrient management, and weeding was significantly less than that of control farmers. The intervention group was able to reduce costs by using the recommended quantities of seeds and inputs, and realizing better market prices as they had better information available on the inputs. Rizvi (2011) based on his study revealed that the annual average income of users of LifeLines was about 37% more than the control group. For 67% of the intervention group, there was an increase in savings and earnings because of increased productivity and disease control. Burgos (2011) revealed that farmers, when asked what the price would have been if they had not received this information, 87 percent said that they obtained a higher price, averaging 12.5 percent more. Moeleltsi (2013) found that providing rainfall forecasts together with recommendations assists the farmers during the growing season in making decisions on planting time, weeding, fertilizing, application of pesticides and other management practices.

Few studies have attempted to unravel the factors responsible for utility of ICT services by farmers. According to a study conducted by Kante et.al.,(2016), farmer's perception such as the relative advantage, compatibility, simplicity, observability and social influence of ICTs and information quality had positively affected the use of ICTs on agricultural input information in developing countries. Cost, education, age and Gender play a significant role in the adoption or rejection of ICT based services. (Ninsima, 2015). Though, few literature were traced on the factors influencing the farmers to use ICT services, research on the factors governing the reception and utility of Short Messaging Services(SMS) were found to be scarce. This being so, many attempts were made to use SMS to transfer technologies, market information and weather information by many Institutions. The Government of Tamil Nadu has established Agricultural Market Intelligence and Business Promotion Centre, (AMIBPC) a state level nodal body at Tiruchirappali which is sending SMS regularly to farmers all over the state related to Market information. Besides, the State Department of Agriculture of Tamil Nadu, has instituted Farm Crop Management System, a data base of farmers in all districts through which SMS are being sent.

Keeping in mind, the paucity of studies on factors influencing the utility of agriculture related SMS by farmers and to give policy suggestions to the interventions as listed above of Tamil Nadu Government, a study has been contemplated with the following objectives

- 84 1. To study the factors influencing the utility of Short Messaging Services (SMS)
- 85 by farmer
- 86 2. To unravel the pattern between the factors and to meaningfully group them
- 87

88 The findings of the study will give useful suggestions to the Government
89 institutions which are designing SMS for farmers. Further, the study will highlight the
90 factors which is highly influencing and less influencing the utility of SMS by farmers
91 thereby suggesting suitable policy measures for effective utilisation of SMS as a tool for
92 agricultural technology transfer

93 **Methodology**

94 **The research design used for the study was 'Ex-post facto design'.** In Ex-post Facto
95 design, the research instead of creating a treatment, evaluate the effect of a
96 naturalistically occurring phenomenon after its occurrence. In this process, the causes
97 were earthed out considering sociological and behavioural studies. The cause might be
98 due to the personal and impersonal variables for the resultant behaviour. In the present
99 study, the factors which influenced the farmers to use mobile phones for getting
100 agricultural information was analysed which has already occurred and the research was
101 not intended to manipulate the incidence of these factors. Hence, the Ex-post facto
102 research design was contemplated to be suitable for the research

103 **Sampling procedure**

104 The research was conducted in Virudhunagar district of Tamil Nadu in India
105 during January 2018 to March 2018. Among 32 districts in Tamil Nadu, Virudhunagar
106 district was chosen using purposive sampling technique. Among the districts
107 Virudhunagar district farmers were reported to receive more number of SMS sent by
108 AMIBPC (Agricultural Market Intelligence and Business Promotion Centre), a state level
109 nodal body to help farmers to get timely SMS on Marketing of Agricultural produce.
110 (Source: Office of AMIBPC, Trichirappalli, Tamil Nadu). Further the farmers of
111 Virudhunagar have been receiving crop related advisories through SMS from Farm
112 Crop Management System (FCMS) an online data base of farmers of the district
113 maintained by the Department of Agriculture

114 In Virudhunagar district of Tamil Nadu, there were 9 blocks out of which two
115 blocks namely Virudhunagar and Kariyapatti were purposively selected based on
116 highest number of farmers registered for receiving SMS (Source: Office of Joint Director
117 of Agriculture, Virudhunagar District, Tamil Nadu). In Virudhunagar block 2550 farmers
118 and in Kariyapatti 1750 farmers were registered for the receipt of SMS from both the
119 sources namely AMIBPC, Trichirappalli and FCMS, Joint Director of Agriculture office,
120 Virudhunagar. One hundred and twenty respondents (120) from eight villages namely
121 Sennelkudi, Pottalpatti, Mettukundam, Kadambankulam, Pisindi, Mallankinaru,
122 Murungankulam and Kaluvanancherry were selected for the study using Proportionate
123 Random Sampling procedure.

Data collection

A well structured interview schedule was constructed to collect data from respondents. The items with respect to socio-economic profile of respondents, twenty three factors to know about their influence on receiving and using SMS from Department of Agriculture were included in the schedule. The interview schedule was pre tested in a non sampling village and the inadequacies in the schedule was corrected. The respondents were personally contacted and consent was obtained for giving information. The interview was conducted among 120 respondents from January 2018 to March 2018.

Measurement of variables and data analysis

Age, education, Area under cultivation, occupational status, annual income, Possession and utility of Mobile phones were the socio economic characteristics for which data was collected from the respondents. The data related to these variables were collected, post stratified, scored, tabulated and percentage was worked out.

The data pertaining to 23 identified factors influencing the receipt and utility of SMS by farmers from the Department of Agriculture, Virudhunagar district and AMIBPC, Trichirappalli was measured on four point continuum namely 'High influence', 'Moderate influence', 'Less influence' and 'no influence' and given scores of 4,3,2 and 1 respectively. Percentage was worked for each of the factor in four response categories. Factor analysis is a variable reduction technique and served the purpose of grouping variables based on underlying pattern between the variables. In the present study the determinants of influencing the reception and utility of agriculture related SMS by the farmers were grouped together into different factors using factor analysis.

Results and Discussions

This section is dealt in three parts. First, the socio economic profile of the respondents was discussed briefly followed by the detailed discussion on the factors influencing the reception and utility of SMS by the farmers. The last section dealt with the results of factor analysis.

Socio-Economic Profile

The socio economic profile of the respondents was studied and presented in the table 1.

Table.1 Socio-economic profile

S.No	Profile	Number	Per cent
1.	Age		
	Young	17	14.20
	Middle age	49	40.80
	Old	54	45.00
2.	Education		
	Illiterate	22	18.30
	Functionally literate	11	9.20

	Primary Education	25	20.80
	Secondary Education	40	33.30
	Collegiate Education	22	18.30
3.	Area under cultivation		
	Less than 2.5 acre	20	16.70
	2.6 to 5.5 acre	93	77.50
	More than 5.6 acre	7	5.80
4.	Occupational status		
	Farming alone	76	63.30
	Farming and business	8	6.70
	Farming and wage earning	36	30.00
5.	Annual Income		
	Upto Rs.50000	72	60.00
	From Rs. 50001 to 1.00 lakh	34	28.33
	Above Rs.1.00 lakh	14	11.67
6.	Possession of Smart phones	60	50.00
7.	Utility of smart phones (n=60)		
	Frequently	52	86.67
	Occasionally	6	10.00
	Rarely	2	3.33

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161 Majority of respondents were old aged (45.00%) to middle aged (40.80%). One
162 third (33.30%) of respondents were educated upto secondary level followed by primay
163 (20.80%) and collegiate (18.30%) level. Land holding possessed by majority of the
164 respondents was in the range of 2.6 to 5.5 acres. Farming alone (63.30%) was reported
165 as the primary occupation followed by farming and wage earning(30.00%). Two-third
166 of the respondents were found to be in the annual income category of RS. 50000.
167 Exactly half of the selected respondents possessed smart phones which was used
168 frequently by majority of them (86.67 percent)

169 As detailed in methodology factors influencing the farmers to use mobile phones
170 for receiving and to act upon the short messaging services (SMS) was studied and
171 presented in table 2. These factors were classified into four heads namely message
172 related factors, infrastructure and economy factors, personal factors and facilitating
173 factors.

174 **Message related factors**

175 Since the core of study is to analyse the factors influencing the SMS utility by the
176 farmers for receiving agriculture related information, the nature, type, relevance of the
177 messages in line with the requirement of the farmers were studied.

178 Among these factors readability of messages (63.30%and 25.80%),
179 understandability of messages (55%and 31.70%), size of the messages (51.70%and
180 21.70%), font size of the messages (47.50%and 35.80%) and more information in one

181 messages (43.30% and 31.70%) were found to have 'high influence' to 'moderate
182 influence' among the respondents to receive and utilize the SMS related to agricultural
183 technologies. The respondents reported when the messages were readable,
184 understandable, they tended to read the messages.

185 Along with these two factors 'the size of the messages' were also found to
186 influence the respondents to look into the messages. The respondents opined that they
187 were interested to look into shorter messages rather than lengthier messages. Since,
188 most of the respondents of the study were middle aged to old aged (above 45 years), the
189 larger font size seemed to influence them to look into the messages as it is closely
190 related to eye sight of the respondents. They reported that most of the SMS related to
191 agriculture information were in appropriate font size and they could read it.

192 The information richness is another factor or wholistic information about a
193 technology given in one messages was preferred by the respondents as they need not
194 search for additional information. Considerable number of respondents were in
195 'moderate influence' (31.70%) and 'less influence' category (24.20%) for this factor
196 which indicated that the SMS given was not comprehensive and the administrators who
197 shoot up SMS need to design messages in such a way that they are comprehensive.

198 There was 'moderate influence' (30.80%) to high influence for the factor
199 'requirement or demand of technical information'. Cumulatively half of the respondents
200 were also found to have 'less influence' to 'no influence' towards this factor which
201 clearly revealed that more efforts are to be initiated by the service providers of
202 agriculture based SMS to give demand based information. There was less influence
203 (40.80%) to moderate influence (30.80%) of push messages which indicated that the
204 respondents were not perturbed by the push messages.

205 The results from the table 1, indicated that one third (31.70%) of respondents
206 were 'highly influenced' by 'timeliness of message relevant to crop stage'. Despite, put
207 together, nearly half of the respondents (29.20% and 24.20%) were found to be in
208 'moderate influence' and 'no influence' categories for this factor. The respondents told
209 the researcher that often they used to receive SMS which were not relevant to the stage
210 of crop in their field. Yet another factor supported this finding was the 'message about
211 the crop which was present in the field' did not influence nearly two fifth (40.80%) of
212 the respondents followed by 'less influence' (20.50%) and 'moderate influence'
213 (20.00%).

214 It was found that 'nil influence' were exerted by the factors continuity of
215 message' (39.20% and 34.20%) and 'diversity of information' (37.50% and 33.30%). The
216 respondents told that they had been receiving messages about crop which were not in
217 the field. Further they told that there was neither continuity of message or diversity of
218 information in the SMS that they have received.

The message related to weather forecasting was abundant than technology related and market related SMS. The continuous reception of information starting from variety to market was rarely experienced by the respondents. Though there was 'less influence' (41.70%) and 'no influence' (25.80%) pertained to the usage of technical jargon in the message, nearly one fourth (25.20%) were in moderate influence category and substantiated that messages still need to be technical jargon free which will motivate the respondents to look into the messages.

Infrastructure and economy related factors

It was found from table 1, that there was 'high influence' to 'moderate influence' experienced by the respondents for the factors 'ease in opening messages in the mobile' (50.80% and 29.20%) and 'connectivity, speed of service provider' (44.30% and 36.70%). The respondents felt that certain mobile phones especially smart mobiles did not facilitate them to open the message at once and they found difficulty in opening the message. Similarly they were concerned about connectivity and speed which was affected by absence or limited availability of towers. There was 'moderate influence' (39.20%) which was followed by high influence (34.20%) and less influence (21.70%) exerted on the respondents by the factor 'type of mobile phone'. As discussed already the opening of message varied for different types of mobile phone and hence this factor influenced majority of the respondents.

Personal factors

Nearly three fifth (59.20%) of respondents were found to be 'highly influenced' by the availability of time to look into the messages followed by nearly one-fourth (27.50%) who were in 'moderate influence' category. Majority of the respondents during interview told that time availability amidst the regular work really influenced them to look into the messages. Mood and interest at the time of reception of message was found to be 'highly influencing' (41.70%) and 'moderate influencing' (40.80%) the respondents in receiving SMS. The respondents during the interview registered their views that they had been receiving lot of unnecessary messages from advertisers from various sources which really spoiled the mood and interest in looking into agriculture related SMS.

There was moderate (40.00%) to high influence (35.80%) exerted by the factor 'previous experience of receiving messages' on the respondents. The factor 'successful experience of adopting the technologies given through the messages' had less influence (40.80%) on the respondents followed by nil influence (23.30%). The researcher during the interview was told by many respondents that they rarely adopted the technologies given through SMS. This has clearly indicated that the adoption of technologies or making full use of information has rarely been achieved by the agriculture related SMS.

256 **Table.2.Factors influencing utility of Mobile phones for technology delivery**

S.no	Influencing Factors	High Influence		Moderate influence		Less influence		No influence	
		No	Per cent	No	Per cent	No	Per cent	No	Per cent
I	Message related Factors								
1.	Requirement/demand of a technical information in the form of messages	28	23.30	37	30.80	35	29.20	20	16.70
2.	Push messages sent by advertiser received in the mobile	19	15.80	37	30.80	49	40.80	15	12.50
3.	Font size of the messages	57	47.50	43	35.80	16	13.30	4	3.20
4.	Readability of the messages	76	63.30	31	25.80	11	9.20	2	1.70
5.	Understandability of the messages	66	55.00	38	31.70	16	13.30	-	-
6.	More information in one messages	52	43.30	38	31.70	29	24.20	1	0.80
7.	Timeliness of message relevant to crop stage	38	31.70	18	15.00	35	29.20	29	24.20
8.	Message about the crop which is right in the field	22	18.30	24	20.00	25	20.80	49	40.80
9.	continuity of messages about crop operations	11	9.20	21	17.50	41	34.20	47	39.20
10.	Diversity of information given the messages	8	6.70	27	22.50	40	33.30	45	37.50
11.	Technical jargon used in the messages	4	3.30	35	29.20	50	41.70	31	25.80
12.	Size of the messages	62	51.70	33	27.50	22	18.30	3	2.50

II	Infrastructure and Economy related factors								
13.	The type of mobile phone	41	34.20	47	39.20	26	21.70	6	5.00
14.	Ease in opening a message in mobile	61	50.80	35	29.20	20	16.70	4	3.30
15.	Connectivity and speed of service provider	53	44.20	44	36.70	19	15.00	4	3.30
III	Personal factors								
16.	Availability of Time to look into message	71	59.20	33	27.50	13	10.80	3	2.50
17.	Previous experience in receiving messages	43	35.80	48	40.0	26	21.70	3	2.50
18.	Successful experience in adopting the information given the messages	17	14.20	26	21.70	49	40.80	28	23.30
19.	Mood and interest at the time of reception of messages	50	41.70	49	40.80	12	10.00	9	7.50
IV	Facilitating Factors⁰								
20.	Time in a day at which messages being received.	53	44.20	43	35.80	17	14.20	7	5.80
21.	Credibility of the sender of messages	41	34.20	52	43.3	21	17.50	6	5.00
22.	Influence of fellow farmers /friends/ relatives	25	20.80	43	35.8	39	32.50	13	10.80
23.	Possibility of feedback	-	-	14	11.70	36	30.00	70	58.30

257 **Facilitating factors**

258 Among the facilitating factors 'time in a day at which messages are being
259 received' had a say as it 'highly influenced' (44.20%) and 'moderate influenced'
260 (33.50%) the respondents to look into the messages which indicated that the
261 respondents were satisfied with this factor. Majority of the respondents were in
262 'moderate influence' (43.30%) and 'high influence' (34.20%) categories pertaining to
263 credibility of the sender of the messages. This result indicated that there existed
264 credibility gap which the Extension personnel of Department of Agriculture need to
265 plug.

266 The fellow farmers, friends, relatives were found to 'moderate influence'
267 (34.80%) and 'less influence' (32.50%) the respondents to receive and look into the
268 SMS related to agriculture. This indicated that there was lesser networks among the
269 respondents and they seemed to work in isolation. The possibility of feedback as a
270 factor had nil influence (58.30%) to less influence (30.00%) on the respondents as there
271 was no feedback mechanism inbuilt in the SMS received by the farmers from
272 department of agriculture and AMIBPC. The respondents told that they did not know
273 how to clarify the doubts related to messages as there was no feedback mechanism.

274 **Factoring of attributes influencing the farmers to receive and to utilise the Short** 275 **Messaging Services (SMS) related to Agriculture**

276
277 The factors which influence the Farmers to receive and to utilise the Short
278 Messaging Services (SMS) related to Agriculture have been detailed in the previous
279 section. These factors may be associated with the message related, personal related,
280 infrastructure related or any other facilitating factors etc., In order to find out the
281 pattern of grouping among these factors and to identify underlying relationship
282 between them, factor analysis was run with the help of SPSS version 16.00 and the
283 results are presented below.

284 As a first step, the suitability of the data for factor analysis was checked. The
285 Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.704, which indicated that the
286 data was amenable for factor analysis. Hence it was decided to proceed further. The
287 principle component analysis extracted three factors through varimax rotation and the
288 results revealed that 43.64 per cent variation in the reception and utility of SMS by the
289 farmers was explained cumulatively by the extracted three factors.

290 The first factor accounted for variation of 19.46 in the reception and utility of
291 SMS by farmers followed by 16.85 per cent and 7.22 per cent of variation explained by
292 second and third factors respectively. The table 5 showed the factors loaded into three
293 components and the magnitude of factor loadings.

294

295 **Table.3. Rotated Component Matrix**

S.no	Factors	Component		
		1	2	3
1	Availability of Time to look into message			0.555
2	Previous experience in receiving messages			0.720
3	Mood and interest at the time of reception of messages			0.734
4	Time in a day at which messages being received.			0.568
5	Credibility on the sender of messages			
6	Demand of a technical information in the form of messages	0.622		
7	Push messages sent by advertiser received in the mobile			
8	The type of mobile phone		0.527	
9	Ease in opening a message in mobile		0.571	
10	Font size of the messages		0.725	
11	Readability of the messages		0.710	
12	Understanding of the messages		0.730	
13	More information in one messages			
14	Timeliness of message relevant to crop stage	0.731		
15	Message about the crop which is right in the field	0.859		
16	Continuing of messages about crop operations	0.749		
17	Diversity of information given the messages	0.645		
18	Technical jargon used in the messages			
19	Influence of fellow farmers /friends relatives			
20	Size of the messages			
21	Connectivity and speed of service provider			
22	Successful experience in adopting the information given the messages	0.547		
23	Possibility of feedback	0.708		

297 **Factor I**

298 In the first component,  factors which got positively loaded with highest factor
 299 loadings were message about the crop which is right in the field (0.859), Continuity of
 300 messages about crop operations (0.749), Timeliness of messages relevant to the crop
 301 stage (0.731), Possibility of feedback (0.708), diversity of information (0.645), demand
 302 for technical information in the form of SMS (0.622) and successful experience in
 303 adopting the information given through messages (0.547). As discussed already in the
 304 previous section, the timeliness, continuity, diversity had lesser or nil influence on the
 305 respondents. Though, these factors got loaded heavily into this component which
 306 implied that they need harnessed attention by the senders of SMS. Similarly the demand
 307 for information and successful adoption of technologies given through SMS were
 308 reported to have less or nil influence from which it is inferred that more efforts are
 309 needed by the senders of SMS to study the process of technology adoption for the
 310 technologies given through SMS, keeping in mind the location specific demands of those
 311 technologies.

312 **Factor II**

313 There was a clear grouping of factors observed in component II. Understandability of
 314 messages (0.730), font size of message (0.725) and readability of the message (0.710)
 315 were the factors which got loaded positively with higher factor loadings. The findings
 316 presented in the preceding section revealed that these factors had higher to moderate
 317 influence on respondents. The striking point here is that the creators and senders of
 318 SMS should keep in mind these factors which were found to influence the farmers
 319 predominantly. The mobile related factors of type of mobile (0.527) and ease in opening
 320 messages (0.571) were moderately loaded into the second component. From this
 321 loading it could be inferred that besides the nature of messages the mobile set also had
 322 influenced the farmers to make use of the SMS effectively.

323

324 **Factor III**

325 The grouping of factors in component III lucidly portrays that the factors related to
 326 individual farmers characteristics was loaded positively. Mood and interest at the time
 327 of reception of messages (0.734), previous experience in receiving information (0.720)
 328 were loaded with higher positive factor loadings whereas time in a day at which
 329 messages are being received (0.568) and availability of time to look into the message
 330 (0.555) moderately got loaded into this component. The personal characteristics do
 331 play a pivotal role in stimulating the farmers to devote time for looking into the
 332 message. Preferably farmer's experience and interest will go a long way in shaping their
 333 SMS reception and utility.

334

335 **Conclusion and Recommendations from the study**

336

337 A study was conducted among 120 farmers as respondents in Virudhunagar
 338 district of Tamil Nadu with the objective of analysing the factors influencing the

reception and utility of Short Messaging services given by two sources namely Farm Crop Management System(FCMS) of Department of Agriculture, Virudhunagar district and Agricultural Market Intelligence and Business Promotion Centre, a Tamil Nadu Government entity in Tiruchirappalli of Tamil Nadu. Ex-post facto research design was employed and the farmers were selected using proportionate random sampling procedure. The data was collected using a well-structured interview schedule.

Among the factors, readability of messages, understandability of messages, size of the messages, font size of the messages and more information in one messages were found to have 'high influence' to 'moderate influence' on the respondents to receive and utilise SMS. There was little or no influence' exerted by the factors 'continuity of message' and 'diversity of information'. Nearly three fifth of respondents were found to be 'highly influenced' by the availability of time to look into the messages Mood and interest at the time of reception of message was found to be 'highly influencing' and 'moderate influencing'. There was moderate (to high influence exerted by the factor 'previous experience of receiving messages' on the respondents while the factor 'successful experience of adopting the technologies given through the messages' had less influence on the respondents. The factor analysis resulted in three factors which got loaded based on message and season, mobile and technical aspects of message and influence of personality on the reception of messages.

The following recommendation could be drawn from the findings of the study.

1. The study results revealed that timeliness, continuity of messages, messages about the crop in the field and demand based location specific SMS had little or nil influence on the respondents. This implied that the SMS creators and senders should keep in mind the area, stage of crop and demand for technology before shooting up the messages to the farmers.
2. There was no possibility of feed back in the message. Hence, the administrators of this intervention should think of including free of cost feedback mechanism to be set inbuilt into the system of SMS based technology delivery
3. Very lesser number of farmers were reported to adopt the technologies given through the SMS. Efforts are to be taken by the Extension workers of line departments to study the process of travel of information and the reception behaviour of farmers to understand the constraints in adopting those technologies.
4. The respondents of the study were found to have been influenced by readability, understandability and font size of the messages which implied that the extension workers should design the messages which are readable, understandable easily by the farmers.
5. The predominance of the factors like readability, font size, understandability resulted in a recommendation to Agricultural Extension researchers that a study may be commissioned for 'Participatory Designing of Messages for SMS' and this can be conducted in an Action research mode with the participation of farmers and Extension researchers.

6. The study results revealed that the utility of SMS by farmers was not influenced by friends, relatives and fellow farmers which indirectly indicated poor networking among farmers. Hence, the Extension personnel of Department of Agriculture who are already forming Farmer Producer Groups may strengthen their activities in forming farmers groups and these group members may be enrolled for receiving SMS which will be purposeful as farmers of same attitude could be networked.
7. In nut shell, the data was distributed among four categories, and there were significant number of respondents in little or no influence categories which indicated that the respondents were not too confident about the mobile based technology delivery. Hence, it is recommended that the Extension personnel of line departments should design trainings for farmers on ICT based agricultural technology delivery along with their regular technology oriented trainings to farmers.

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